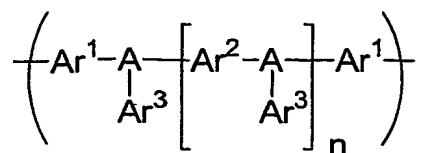


## Claims

- 1) An optionally substituted oligomer or polymer comprising a repeat unit of formula (I):

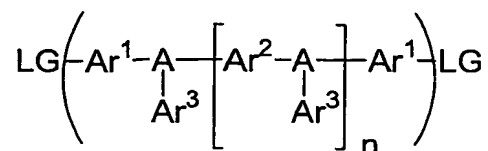


(I)

- wherein n is at least 1; each A is a nitrogen atom or optionally substituted phosphorus atom; each Ar<sup>1</sup> is the same or different and independently represents an optionally substituted arylene or heteroarylene; each Ar<sup>3</sup> is the same or different and independently represents an optionally substituted aryl or heteroaryl; Ar<sup>2</sup> represents an optionally substituted arylene or heteroarylene comprising a linking ring to which the two atoms A are both directly linked; and at least one of Ar<sup>2</sup>, and / or either or both of Ar<sup>1</sup> is substituted with at least one substituent.
- 2) An oligomer or polymer according to claim 1 wherein the substituent on Ar<sup>1</sup> or Ar<sup>2</sup> is selected from the group consisting of optionally substituted, aliphatic or alicyclic C<sub>1-20</sub> alkyl; C<sub>1-20</sub> fluoroalkyl; C<sub>1-20</sub> alkoxy; halogen; nitro; cyano; sulfone and sulfoxide.
  - 3) An oligomer or polymer according to claim 1 or 2 wherein Ar<sup>2</sup> carries one or two substituents only.
  - 4) An oligomer or polymer according to any preceding claim wherein each Ar<sup>1</sup> and Ar<sup>2</sup> are phenyl.
  - 5) An oligomer or polymer according to any preceding claim wherein Ar<sup>3</sup> is optionally substituted phenyl.
  - 6) An oligomer or polymer according to any preceding claim wherein the oligomer or polymer comprises at least a second repeat unit.
  - 7) An oligomer or polymer according to claim 6 wherein the further repeat unit is conjugated to the first repeat unit.
  - 8) An oligomer or polymer according to claim 6 or 7 wherein any further repeat unit is selected from optionally substituted phenyl, fluorene, spirobifluorene, indenofluorene, heteroaryl, dihydrophenanthrene or triarylamine.
  - 9) An oligomer or polymer according to any preceding claim wherein at least one Ar<sup>3</sup> is substituted by a substituent selected from the group consisting of optionally

substituted, branched, cyclic or linear C<sub>1-20</sub> alkyl or C<sub>1-20</sub> alkoxy; C<sub>1-20</sub> fluoroalkyl and fluorine.

- 10) A blend comprising an oligomer or polymer according to any preceding claim and an organic compound capable of at least one of the functions of hole transport, electron transport and emission.
- 11) An optionally substituted monomer of formula (II):



(II)

wherein Ar<sup>1</sup>, Ar<sup>2</sup> and Ar<sup>3</sup>, A and n are as defined in any one of claims 1-9; LG is the same or different and represents a leaving group capable of participating in a polycondensation mediated by a metal of variable oxidation state; and at least one of Ar<sup>2</sup> and / or either or both of Ar<sup>1</sup> is substituted with at least one substituent.

- 12) A monomer according to claim 11 wherein each LG is the same or different and is independently selected from halogen; a reactive boronic group selected from a boronic acid group, a boronic ester group and a borane group; or a moiety of formula -O-SO<sub>2</sub>-Z wherein Z is selected from the group consisting of optionally substituted alkyl and aryl.
- 13) A method of forming an oligomer or polymer comprising the step of oligomerising or polymerising a monomer according to claim 11 or 12 wherein said oligomerisation or polymerisation is mediated by a metal of variable oxidation state.
- 14) A method according to claim 13 wherein each LG is independently a halogen or a moiety of formula -O-SO<sub>2</sub>-Z as defined in claim 12, and the monomer of formula (II) is oligomerised or polymerised in the presence of a nickel complex catalyst.
- 15) A method according to claim 14 wherein the monomer of formula (II) is oligomerised or polymerised with a second aromatic monomer in the presence of a palladium complex catalyst and a base and
  - a. each LG is the same or different and comprises a reactive boronic group and the second monomer comprises two reactive groups independently selected from halogen and a moiety of formula -O-SO<sub>2</sub>-Z as defined in claim 12, or

- b. each LG independently comprises a halogen or a moiety of formula  $-O-SO_2-Z$  as defined in claim 12 and the second monomer comprises two reactive boron groups which are the same or different.
- 16) A method according to claim 13 wherein one LG is a reactive boron group; the other LG is a halogen or a moiety of formula  $-O-SO_2-Z$  as defined in claim 12; and the monomer of formula (II) is oligomerised or polymerised in the presence of a palladium complex catalyst and a base.
- 17) An optical device comprising an oligomer or polymer according to any one of claims 1 to 9.
- 18) An optical device according to claim 17 wherein the oligomer or polymer is provided as a blend according to claim 10.
- 19) An optical device according to claim 17 or 18 wherein the oligomer or polymer or blend is located in a layer between a first electrode for injection of holes and a second electrode for injection of electrons.
- 20) An optical device according to any one of claims 17-19 that is an electroluminescent device.
- 21) A switching device comprising an oligomer or polymer according to any one of claims 1 to 9.
- 22) A field effect transistor comprising an insulator having a first side and a second side; a gate electrode located on the first side of the insulator; an oligomer or polymer according to any one of claims 1 to 9 located on the second side of the insulator; and a drain electrode and a source electrode located on the oligomer or polymer.
- 23) An integrated circuit comprising a field effect transistor according to claim 22.